

What is claimed is:

1. A method for measuring dimensions of minute structures comprising:

5 irradiating primary electrons onto the minute structures;

providing image data of the minute structures by detecting secondary electrons generated from the minute structures;

determining at least two measuring regions over the minute structures using the image data; and

10 calculating dimensions of the minute structures corresponding to the measuring regions.

2. The method of claim 1, wherein the minute structures comprise a line, a hole, a trench, a space or a combination thereof formed on a semiconductor substrate.

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3. The method of claim 1, further comprising synchronizing the primary electrons to scan the minute structures after irradiating the primary electrons onto the minute structures.

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4. The method of claim 1, wherein the secondary electrons are generated by an ionization reaction between the primary electrons and atoms of the minute structures.

5. The method of claim 1, wherein providing the image data comprises storing the image data in a storage member.

6. The method of claim 1, wherein providing the image data  
5 comprises converting the secondary electrons into current signals.

7. The method of claim 1, wherein determining at least two measuring regions comprises mapping a boundary movable along an X-axis and a Y-axis on an image generated from the image data.

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8. The method of claim 1, wherein calculating the dimensions of the minute structures comprises correlating the image data to the measuring regions.

9. An apparatus for measuring dimensions of minute structures  
15 comprising:

an electron emission member for irradiating primary electrons onto the minute structures;

a display member for displaying image data formed by detecting secondary electrons generated from the minute structures, the display member  
20 determining at least two measuring regions over the minute structures;

a storage member for storing the image data and measurement data, the measurement data being obtained at the measuring regions; and

an operation member for calculating dimensions of the minute structures corresponding to the measuring regions.

10. The apparatus of claim 9, wherein the minute structures comprise a line, a space or a contact hole formed on a semiconductor substrate.

11. The apparatus of claim 9, wherein the electron emission member  
5 focuses the primary electrons on the minute structures, and synchronizes the primary electrons on the display member to scan the minute structures.

12. The apparatus of claim 11, wherein the electron emission member comprises:

10 an electron gun for emitting the primary electrons;  
a magnetic lens for focusing the primary electrons on the minute structures;  
a scanning coil for synchronizing the primary electrons;  
a first electron detector for detecting the primary electrons scattered from  
15 the minute structures; and  
a second electron detector for detecting the secondary electrons.

13. The apparatus of claim 9, wherein the operation member calculates the dimensions of the minute structures from the image data  
20 corresponding to the measuring region, and transmits the measurement data including the dimensions of the minute structures to the display member and the storage member connected thereto.

14. The apparatus of claim 9, wherein the display member comprises:  
an image processing device for generating the image data;  
a monitor for displaying the image data in a form of an image; and  
a controller for determining the measuring regions, the controller being  
5 connected to the operation member.

15. The apparatus of claim 14, wherein the image processing device  
converts the secondary electrons into current signals to generate the image  
data.

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16. The apparatus of claim 14, wherein the controller determines the  
measuring regions by mapping a movable boundary along an X-axis and a Y-  
axis with the image on the monitor, and transmits coordinate values of the  
measuring regions to the operation member.

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17. The apparatus of claim 16, wherein the operation member  
calculates the dimensions of the minute structures by receiving a signal based on  
the measuring regions from the display member and by correlating the image  
data to the measuring region, and transmits the measurement data including the  
20 dimensions of the minute structures to the monitor and the storage member.

18. A method for measuring dimensions of minute structures comprising:

providing image data of the minute structures;

forming an image of the minute structures using the image data;

5 determining at least two measuring regions in the image; and

calculating dimensions of the minute structures within each measuring region simultaneously.

19. The method of claim 18, further comprising:

10 irradiating primary electrons onto the minute structures, wherein the step of providing image data of the minute structures includes detecting secondary electrons generated from the minute structures.

20. The method of claim 18, wherein the step of determining at least  
15 two measuring regions comprises mapping a boundary movable along an X-axis and a Y-axis on the image.